

# **FREQUENCY-DEPENDENT PHASE PRE-DISTORTION FOR REDUCING SPURIOUS EMISSIONS IN COMMUNICATION NETWORKS**

## **ABSTRACT OF THE DISCLOSURE**

5           A frequency-dependent phase pre-distortion technique is applied to an input signal in order to  
reduce spurious emissions resulting from subsequent amplification of the signal. In preferred  
embodiments, the frequency-dependent phase pre-distortion of the present invention is implemented in  
combination with the (frequency-independent) magnitude and phase pre-distortion technique described in  
U.S. Patent Application No. 09/395,490 ("the '490 application"), where one or more frequency-  
10       dependent phase pre-distortion signals are either advanced or delayed relative to the main pre-distorted  
signal generated in accordance with the '490 application. Each frequency-dependent phase pre-distortion  
signal is preferably based on a  $180^\circ$  phase difference between a pair of (critical) frequencies located  
outside (e.g., one on each side) of the signal channel. The magnitude of the frequency difference  
between the pair of critical frequencies dictates the magnitude of the desired advancement or delay in  
15       time of the frequency-dependent pre-distortion signal relative to the main pre-distorted signal.  
Embodiments of the present invention may be implemented in either the baseband domain or the RF  
domain. Implementations may also be based on look-up tables that are adaptively updated to ensure  
optimal performance over time.